MHPCC Data Center Energy Efficiency Measures

Impact of Higher Air Intake Temperatures

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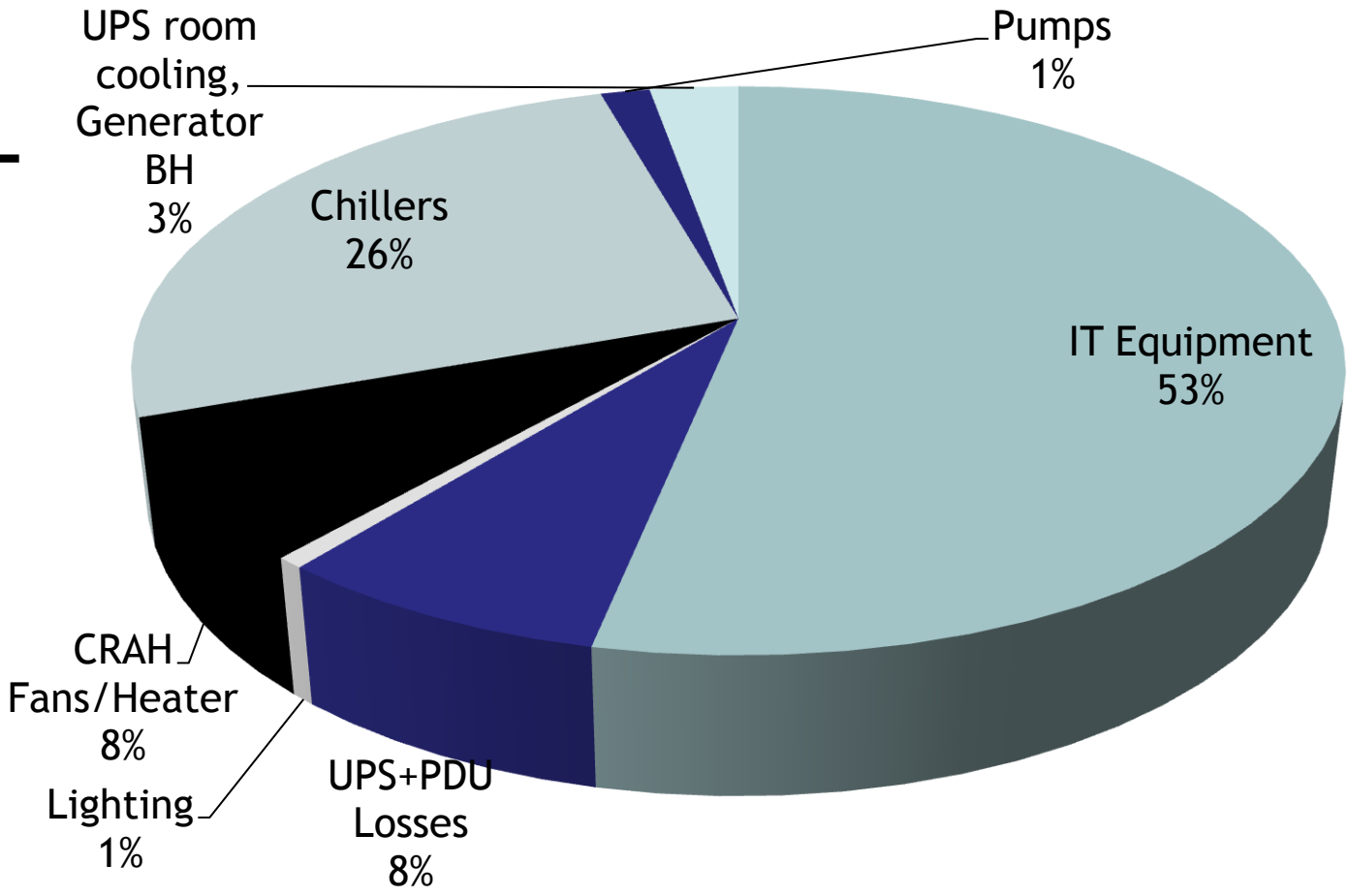
Federal Data centers Case studies

MHPCC Data Center

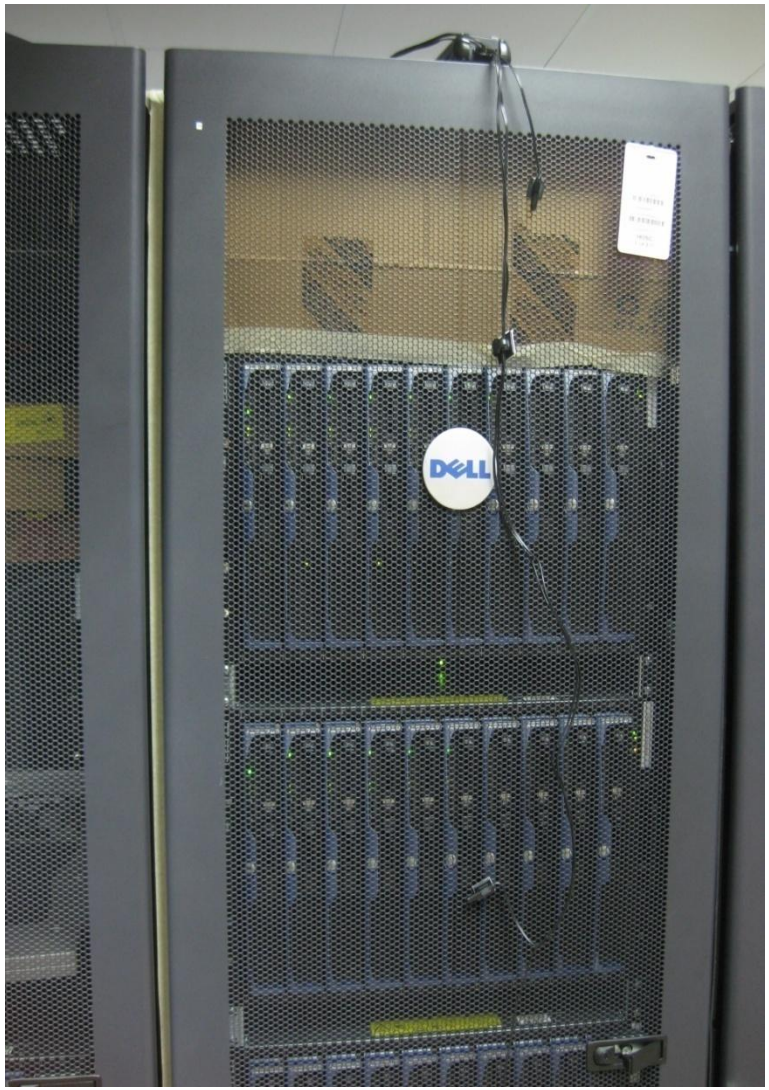
5,000 sf
500 kW IT
8GWh

Tropical climate
Air-cooled Chillers
CRAHs



Case studies

Seal all floor leaks and those between and within the racks

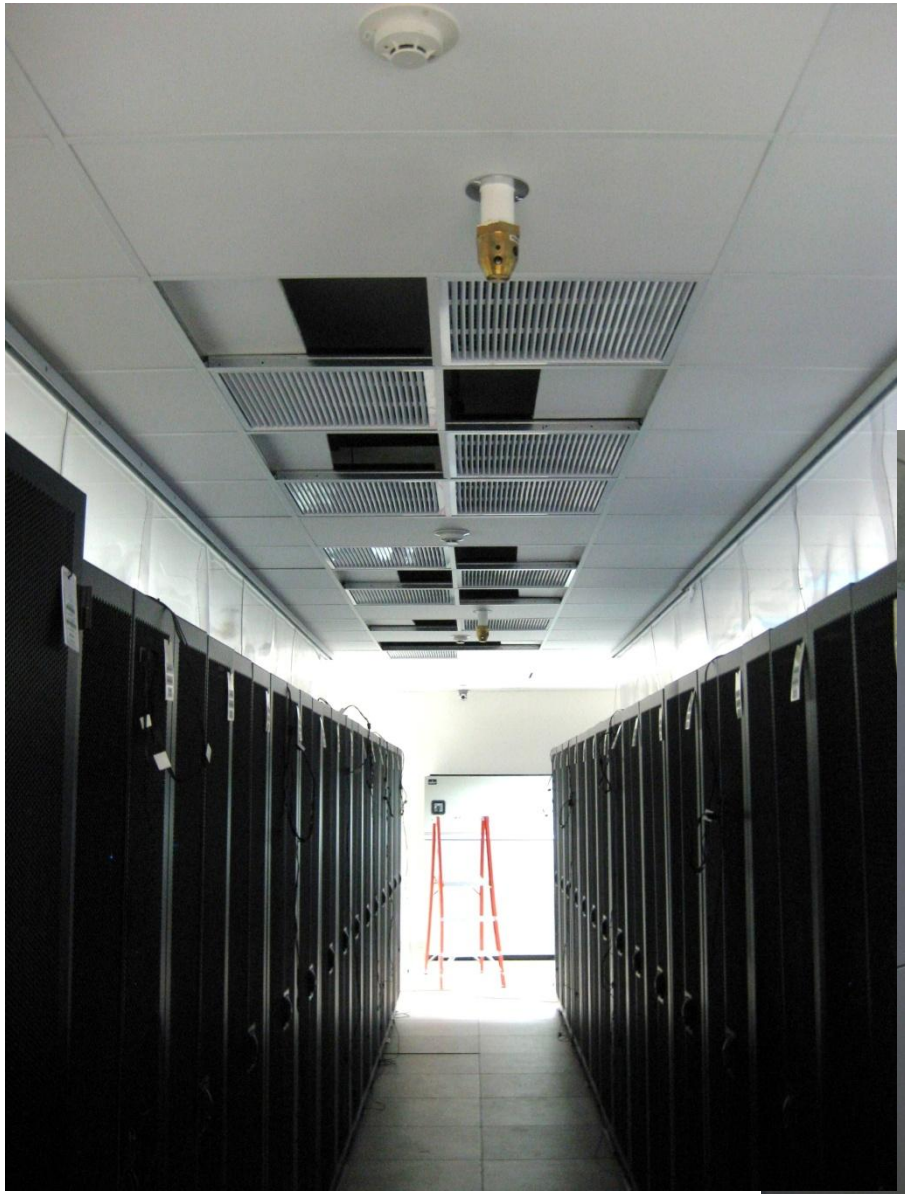


Case studies

Replaced Perf tiles

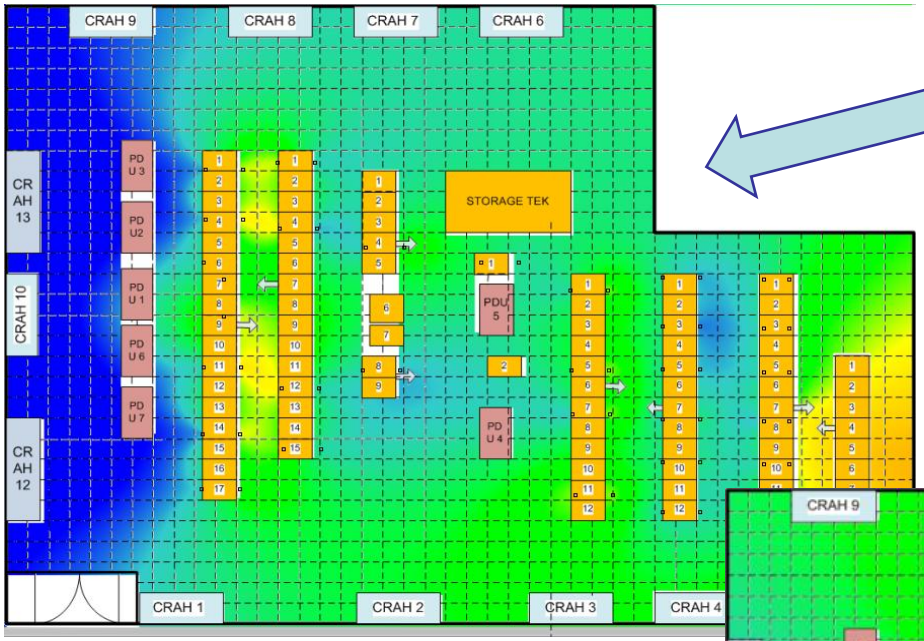
Redirect cold air from the CRAHs

Case studies

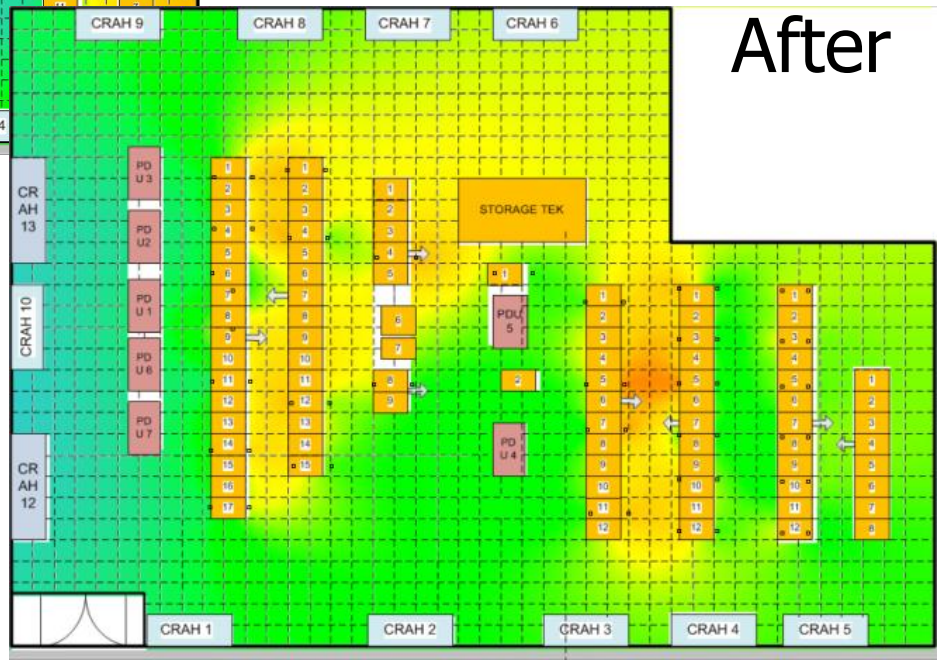


Ceiling space as a plenum

Case studies



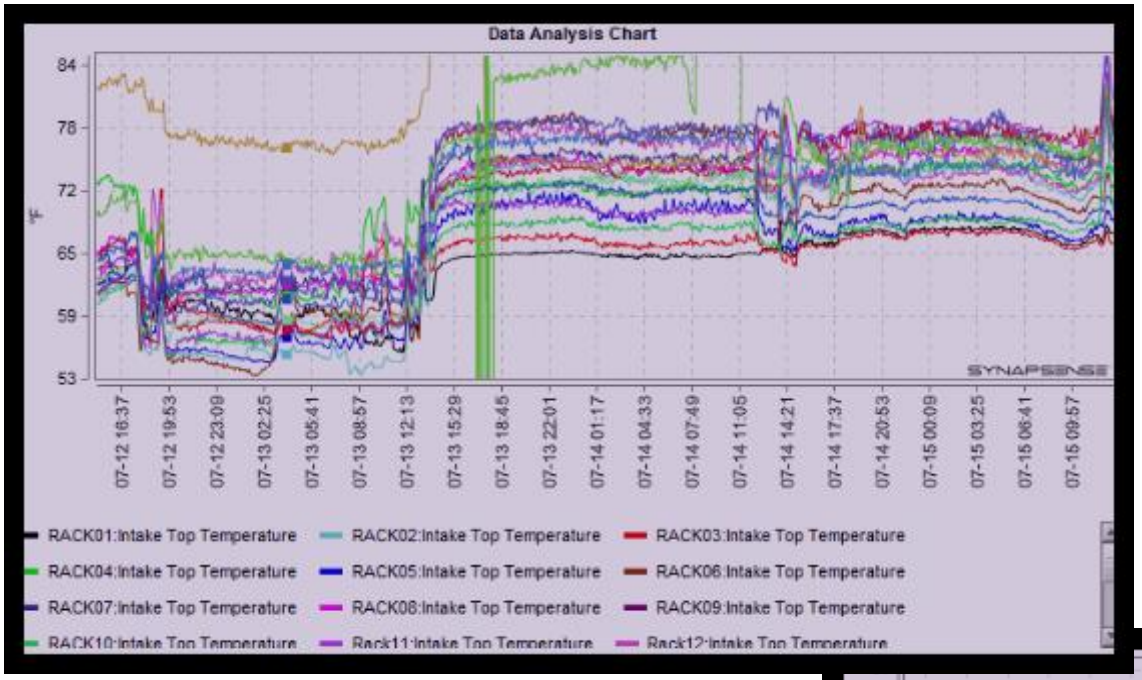
Before trials begin



After

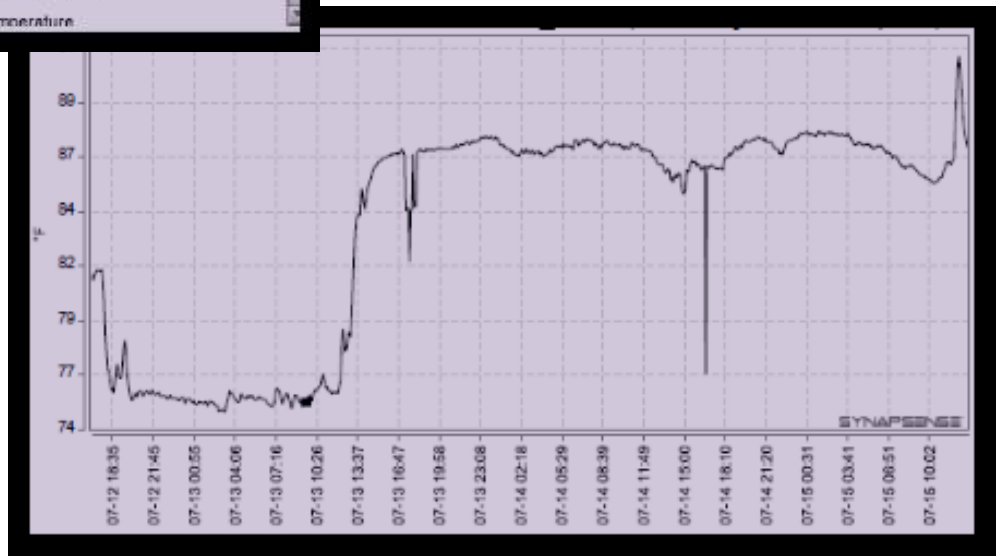
RAT increased from 74degF to 84degF

Case studies

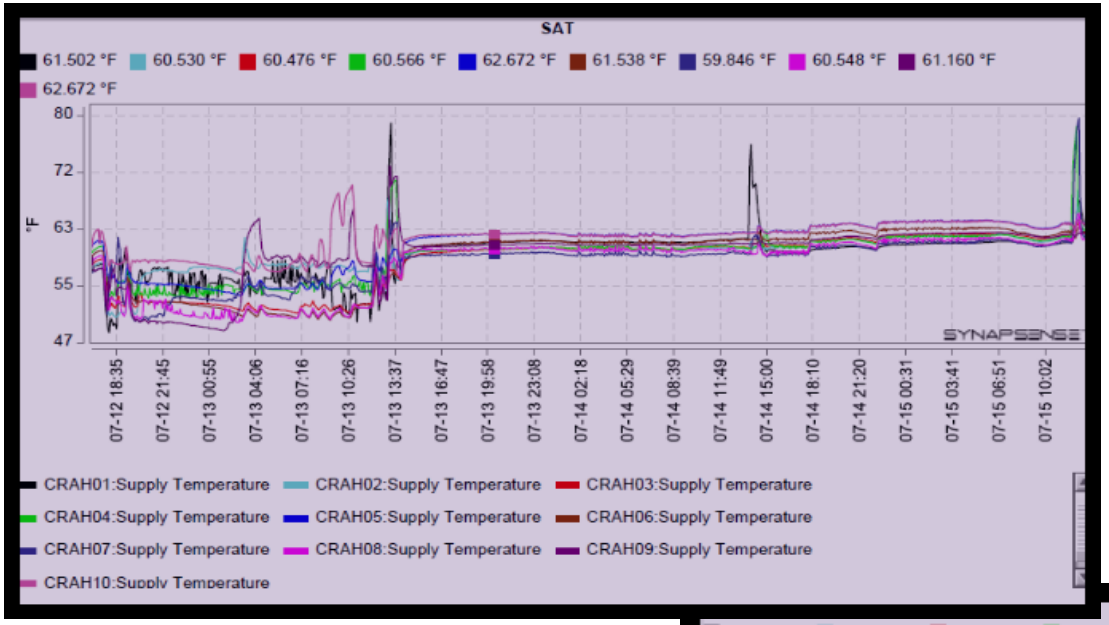


Individual racks intake top temperature change during trials (60-72)

Average rack exhaust temperature change during trials (75-87)

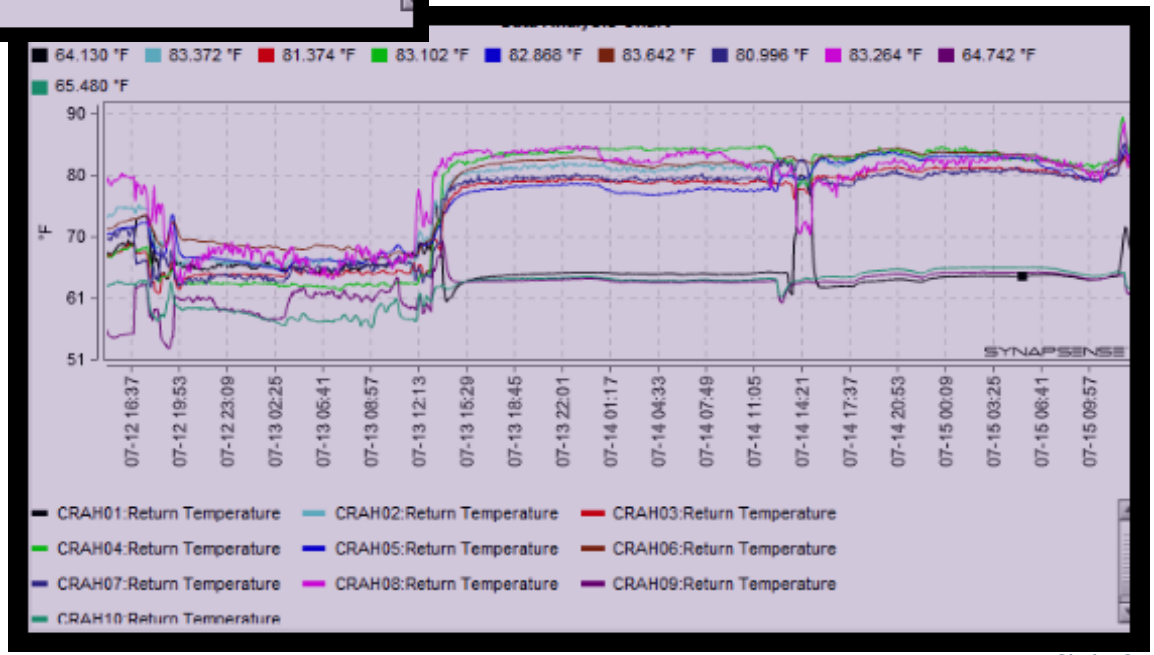


Case studies



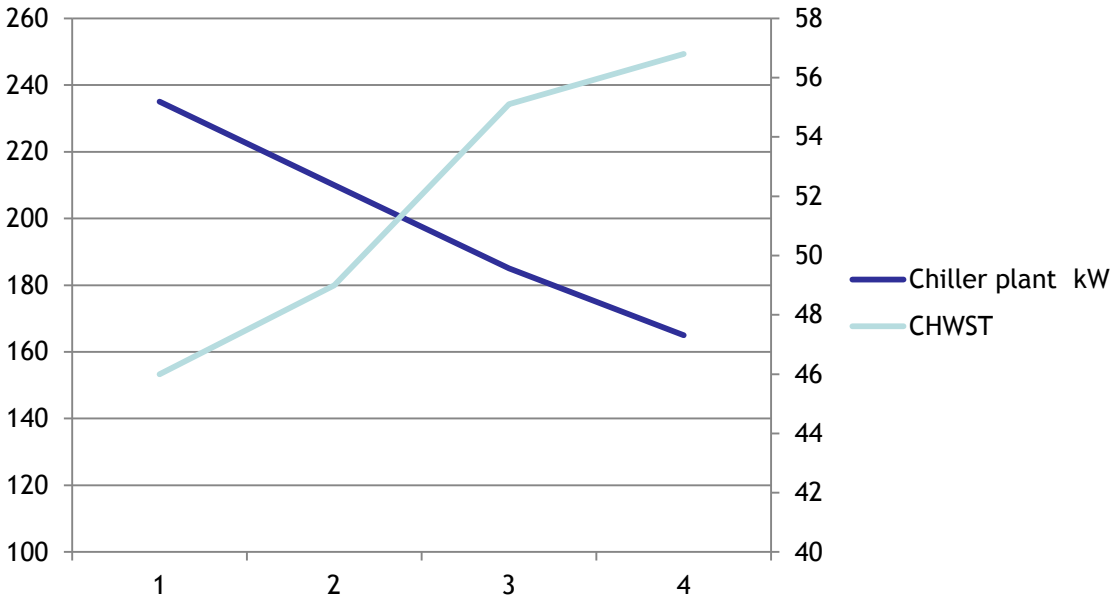
CRAHs Supply Avg. Temperatures
53 to 62

CRAHs Return Avg. Temperatures
64 to 83



Case studies

Chillers Efficiency Improvement



CHWST sp degF	*45*	*49*	*54*	*56*
CHWST degF	46	49	55.1	56.8
CH1 kW	75	75	0	0
CH2 kW	75	75	100	75
CH3 kW	75	50	75	75

Case studies

Saved annually:

800MWh
$240,000 utility cost
780 metric tons of GHG emission